## **CLAIMS**

## What is claimed is:

 A scalable call processing node for receiving SS7 messages and for formulating media-gateway-compatible messages, the scalable node comprising:

- (a) a plurality of link interface modules (LIMs) for receiving SS7 messages over SS7 signaling links and performing call server selection based on first message parameters in the SS7 messages, the link interface modules being capable of processing SS7 messages for at least about *n* calls per second, *n* being an integer;
- with the link interface modules for receiving the SS7 messages from the link interface modules based on the call server selection and for performing call setup operations for setting up connections in media gateways, the call server modules being capable of setting up at least about *m* calls per second, *m* being an integer, wherein *n* is variable relative to *m* by changing the relative numbers of link interface and call server modules; and
- (c) a plurality of transporter modules operatively associated with the call server modules for formulating media-gateway-compatible messages based on the call

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processing operations, and for forwarding the mediagateway-compatible messages to media gateways.

- 2. The scalable call processing node of claim 1 wherein n is substantially equal to m.
- 3. The scalable call processing node of claim 1 wherein *m* is at least about 1000 calls per second.
- 10 4. The scalable call processing node of claim 1 wherein *m* is at least about 2000 calls per second.
  - 5. The scalable call processing node of claim 1 wherein m is at least about 3000 calls per second.
  - 6. The scalable call processing node of claim 1 wherein m is at least about 4000 calls per second.
  - 7. The scalable call processing node of claim 1 wherein each of the LIMs is capable of handling eight 56 kbps SS7 signaling links.
  - 8. The scalable call processing node of claim 1 comprising an interprocessor message transport (IMT) bus for interconnecting

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the link interface modules, the call server modules, and the transport modules.

- 9. The scalable call processing node of claim 8 wherein the link interface modules are adapted to send the SS7 messages to the call server modules over the IMT bus.
- 10. The scalable processing node of claim 8 wherein the call server modules are adapted to send the call processing messages to the transporter modules over the IMT bus.
- 11. The scalable call processing node of claim 1 wherein each of the call server modules comprises:
  - (a) a translation table for translating called party address digits to trunk groups;
  - (b) a routing table for assigning the trunk groups to corresponding media gateways;
  - (c) an endpoint table for assigning trunks in the trunk groups to port numbers on the media gateways;
  - (d) a connection table for storing connection information for each connection in each of the media gateways; and
  - (e) a state table for storing call state information for each endpoint of each connection.

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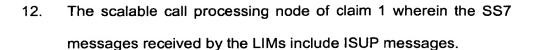
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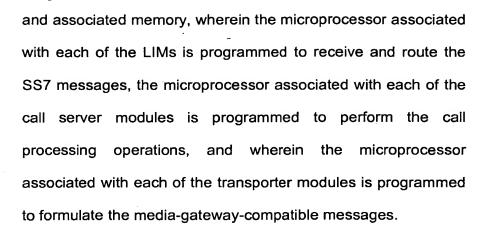
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- 13. The scalable call processing node of claim 1 wherein the call processing operations performed by the call server modules include selecting endpoints in a media gateway to set up a connection.
- 14. The scalable call processing node of claim 13 wherein the call processing operations performed by each call server include maintaining call state information for the endpoints.
- 15. The scalable call processing node of claim 1 wherein the mediagateway-compatible messages generated by the transport modules include CreateConnection messages.
- 16. The scalable call processing node of claim 8 wherein the LIMS, the call server modules, and the transporter modules comprise printed circuit boards, each of the printed circuit boards being removably coupleable to the IMT bus to increase or decrease call signaling processing capacity of the scalable call processing node.
- 17. The scalable call processing node of claim 16 wherein each of the printed circuit boards includes at least one microprocessor



18. The scalable call processing node of claim 17 wherein none of the printed circuit boards includes a disk drive.

- 19. The scalable call processing node of claim 1 wherein the plurality of call processing modules include:
  - (a) a first call server module functioning as the primary call server module for a call; and
  - (b) a second call server module functioning as a backup call server module for the call, wherein both the primary and backup call server modules store call state information for the call and wherein the second call server module switches to become the primary call server module in response to failure of the first call server module.
- 20. The scalable call processing node of claim 19 wherein the switching from backup to primary call server module occurs in less than one second.

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21. The scalable call processing node of claim 19 wherein the switching occurs without transfer of call state information from the first call server module to the second call server module.

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- 22. A scalable call processing node comprising:
  - (a) a link interface module for receiving SS7 call signaling messages and for performing call server selection based on at least one parameter in the SS7 messages;

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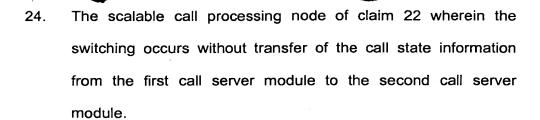
(b) a first call server module for receiving the SS7 messages from the LIM and for functioning as a primary call server for a call and adapted to store state information for the call; and

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(c) a second call server module for storing the state information and functioning as a backup call server for the call, wherein the second call server module is adapted to switch operation to become the primary call server for the call in response to failure of the first call server module.

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23. The scalable call processing node of claim 22 wherein the switching from backup to primary call server module occurs in less than one second.



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25. The scalable call processing node of claim 22 wherein the state information includes at least one call table for storing call-related information.

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26. The scalable call processing node of claim 25 wherein the at least one call table includes an endpoint table for storing endpoint information for a media gateway.

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27. The scalable call processing node of claim 26 wherein the at least one call table includes a connection table for storing connection information for connections in the media gateway.

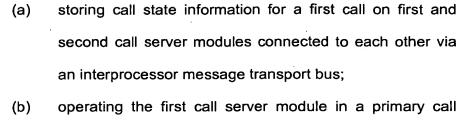
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least one call table includes a state table for storing call signaling state information for endpoints in the media gateway.

The scalable call processing node of claim 26 wherein the at

29. A method for performing call server module switchover in a scalable call processing node in response to call server module failure, the method comprising:



- server mode and operating the second call server module in a backup call server mode;
- (c) detecting failure of the first call server module; and
- (d) in response to failure of the first call server module, switching the second call server module to the primary call server mode without transferring the call state information from the first call server module to the second call server module.
- 30. The method of claim 29 wherein storing call state information includes storing parameters extracted from a sequence of ISUP messages required to set up or tear down the first call.
- 31. The method of claim 29 wherein the primary call server mode includes formulating instructions for setting up or tearing down the first call and forwarding the instructions to a transporter module for translation and transport to a media gateway.
- 32. The method of claim 29 wherein the backup mode includes storing call state information without forwarding call processing messages to intended destinations.

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33. The method of claim 29 wherein switching operation of the second call server module to the primary mode includes switching the operation within a fraction of one second.